SMYN / PGMS PROFESSIONAL WORKSHOP: Erosion and Sediment Control

February 7, 2012

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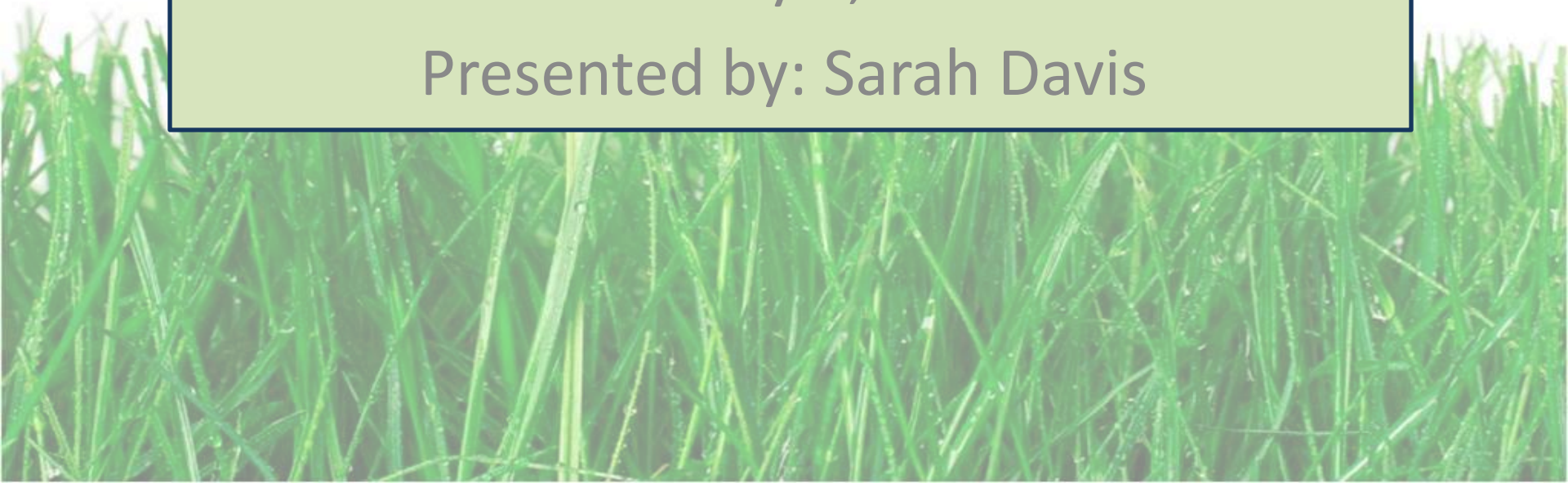
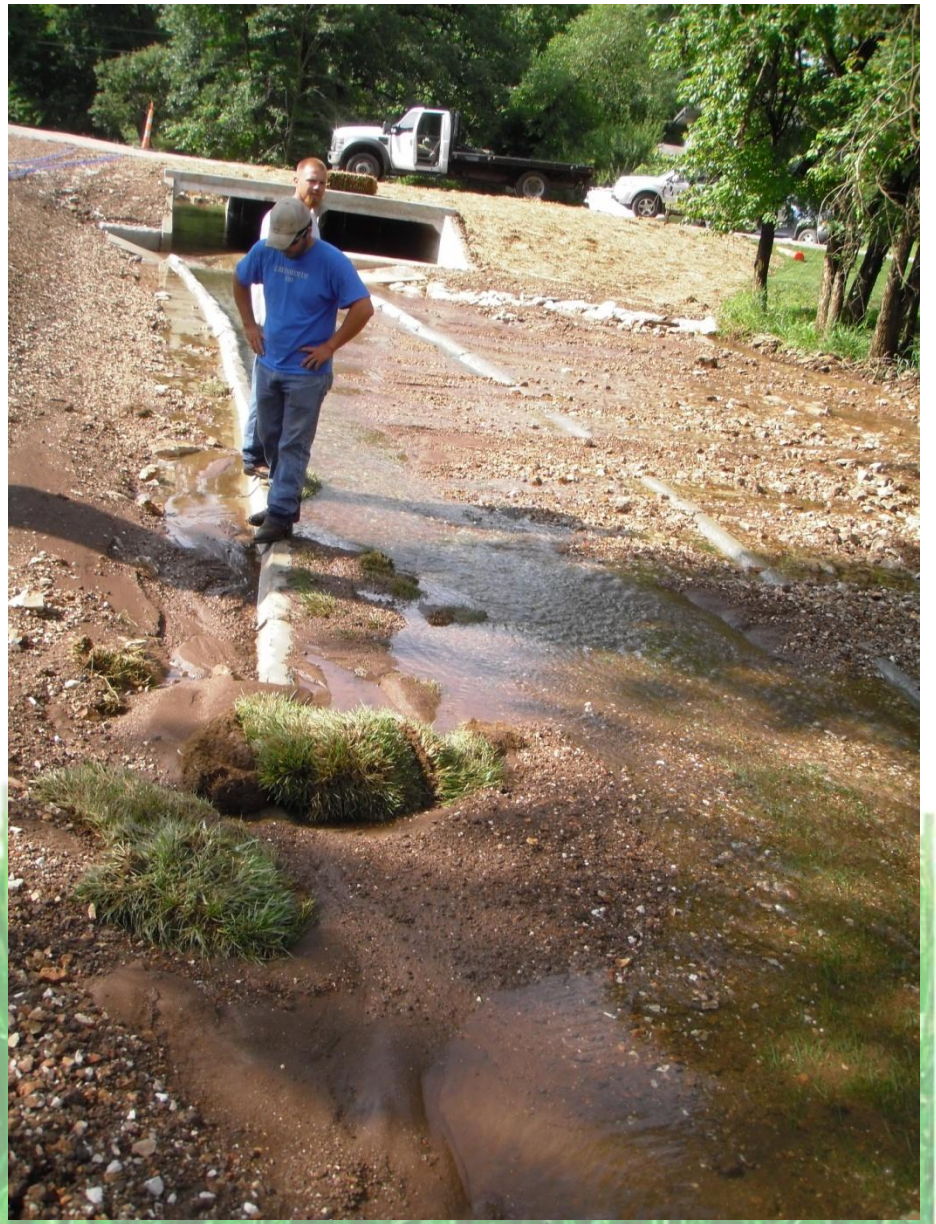


Preventing the Release of Sediment

To our roads…

To pervious pavement…

To our inlets and MS4…



…To our rivers and oceans.

http://www.umrcc.org/River%20Issues.html

http://www.usouthal.edu/geography/fearn/480page/98Gerrit/Gerritt.html

Impacts of **Sediment**

- Transports other pollutants (petroleum products, metals, chemicals, pesticides, bacteria, etc.)
- Harmful to aquatic life
- Increased turbidity
- Sedimentation destroys aquatic habitats (from streams to coral reefs)

Regulations

***EPA and Missouri DNR require Land Disturbance Permits on sites > 1 acre or part of a common plan**

***City of Springfield requires Land Disturbance Permits on sites > 1 acre or part of a common plan AND/ OR within 25 feet of a watercourse**

***Permitted sites must maintain a "Storm Water Pollution Prevention Plan" (SWPPP)**

Regulations

Regardless of project size…

- Release of sediment into the MS4 is prohibited
- Small sites still require BMPs
- Found in City Ordinance

Sec. 96-27. Unlawful to discharge other than storm water into city waters, waters of the state, and city's MS4.

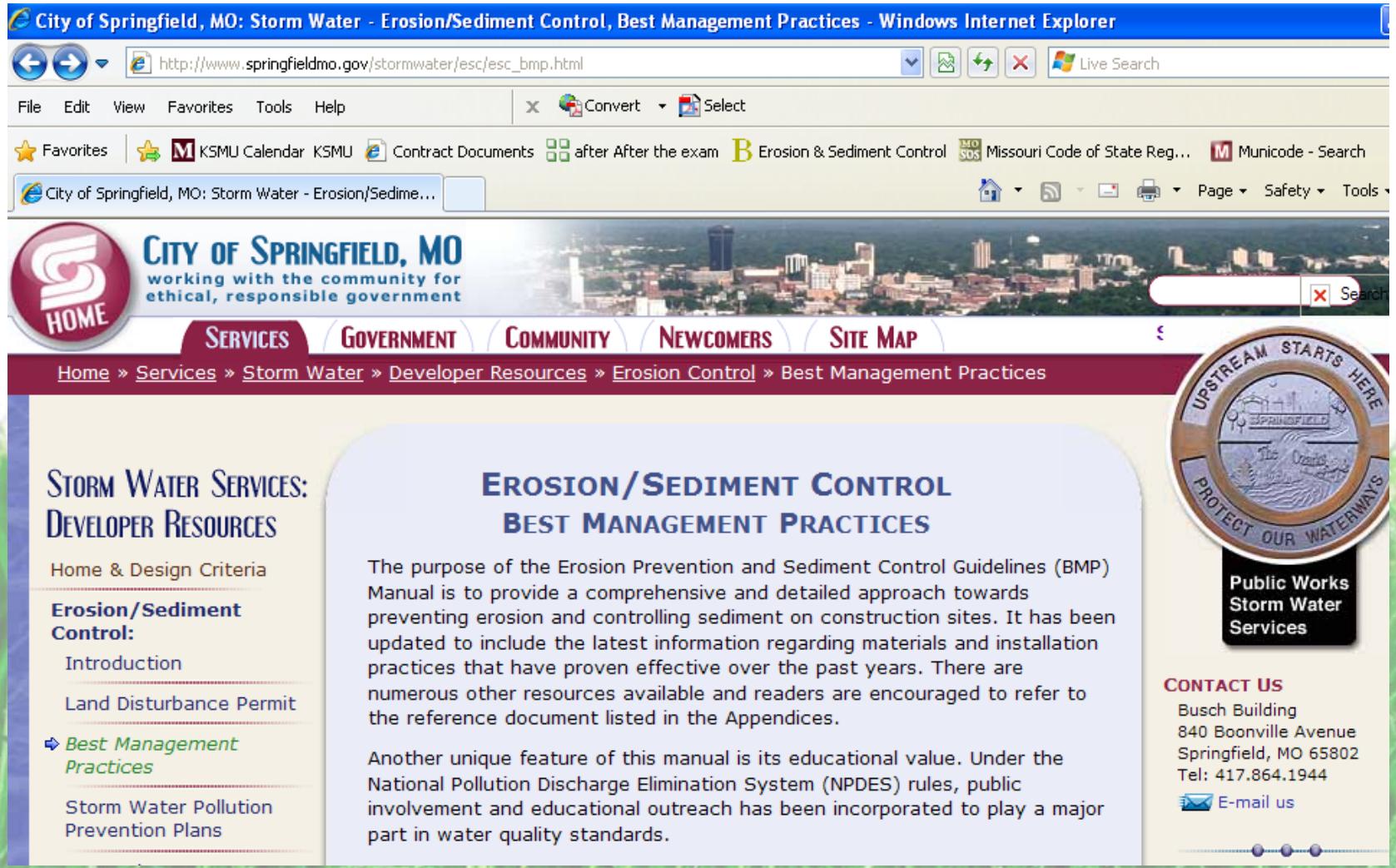
(j) Degreasers, Solvents
(k) Heated Water
(l) Sanitary Sewage, including pollut
(m) Chemically Treated Cooling Wate
(n) Antifreeze, and other Automotive
(o) Lawn Clippings, Leaves or Branch
(p) Animal Carcasses
(q) Silt
(r) Acids or Alkalis
(s) Recreational Vehicle Waste
(t) Dyes (without prior approval from
(u) Construction Materials

96-22. Erosion and Sediment Control.

The Responsible Party shall control site erosion and the release of sediment and other pollutants resulting from land disturbance activities to the Maximum Extent Practicable (MEP) utilizing Best Management Practices (BMPs). The Responsible Party shall ensure that BMPs are designed, constructed and maintained during land disturbance activities in accordance with the most recent version of the City's Erosion and Sediment Control Guidelines Manual, Storm Water Design Criteria Manual, Design Standards for Public Improvements and the General Conditions and Technical Specifications for Public Improvements.

Best Management Practices (BMPs)

http://www.springfieldmo.gov/stormwater/esc/esc_bmp.html



Best Management Practices (BMPs)

Erosion and Sediment Control on Small Sites

- Avoid creating “trackout”
- Clean streets as necessary
- Construction exit?

Erosion and Sediment Control on Small Sites

Locate stockpiles to minimize loss of sediment:

- Buffer with grass
- Use perimeter control on lower side

Working with swales:

•A ditch check may be appropriate until stabilized

ScourStop

Erosion and Sediment Control on Small Sites

- Locate temporary roadways away from stands of trees and shrubs

- Keep materials stored away from protected vegetation

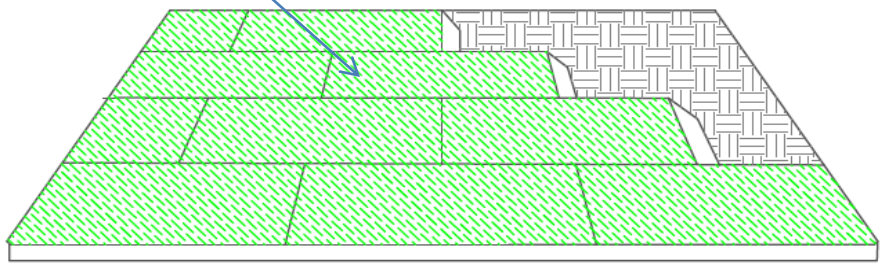
- Restrict heavy equipment, vehicular traffic and storage piles to outside the drip line of protected trees

http://www.google.com/imgres?q=orange+protective+tree+fencing

Achieving Stabilization

http://www.springfieldmo.gov/stormwater/esc/esc_bmp.html

- Mulch
- Seed / Straw
- Hydroseeding
- Sodding



LAY SOD IN A STAGGERED PATTERN WITH STRIPS BUTTED TIGHTLY AGAINST EACH OTHER

ON SLOPE > 3:1 USE PEGS OR STAPLES TO FASTEN SOD FIRMLY AT THE CORNERS AND CENTERS.

INSTALLATION OF GRASS SOD

Topsoil Requirements

Permanent and Temporary Seeding-Loosen compacted soils to a depth of 4 inches. If rainfall causes the surface to become sealed or crusted, loosen it just prior to seeding. Slopes steeper than 33 percent (3:1) grade should be grooved or furrowed on the contour before seeding. A good seedbed is well pulverized, loose, and uniform.

Permanent Seeding-A minimum of 4 inches of loose topsoil should be spread on areas to be seeded.

Lime Requirements

Permanent and Temporary Seeding-Lime should be applied according to soil test recommendations. If the pH of the soil is unknown, lime shall be incorporated into the top 4 inches of soil at the rate of 1500 pounds effective neutralizing material (ENM) per acre. Soils with a pH of six or higher need not be limed.

Fertilizer Requirements

Permanent Seeding-Fertilizer should be applied based on soil tests. When these are not possible, a 13-13-13 grade fertilizer shall be incorporated into the top 4 inches of soil at the rate of 500 pounds per acre.

Temporary Seeding-Fertilizer should be applied based on soil tests. When these are not possible, a 10-10-10 grade fertilizer shall be incorporated into the top 4 inches of soil at the rate of 200 pounds per acre.

Seed Requirements

Permanent Seeding-Seed mix shall consist of ninety percent (90%) tall fescue and ten percent (10%) annual ryegrass. Seed mixture shall be applied at a rate of 400 pounds per acre.

Temporary Seeding-Seed mix shall consist of any combination of tall fescue, annual ryegrass, sudan, millet, wheat, or oats. Seed mixture shall be applied at a rate of 200 pounds per acre.

Dormant Season Seeding-Seed mix shall consist of 80 percent (80%) tall fescue, ten percent (10%) annual ryegrass, and ten percent (10%) spring oats. Seed mixture shall be applied at a rate of 600 pounds per acre.

Mulch Requirements

Permanent and Temporary Seeding-Where slopes are less than 25 percent (4:1) grade, cereal grain mulch is required at the rate of 100 pounds per 1,000 square feet (4,500 lbs/acre). Cereal grain mulch shall meet the requirements of Section 802 of the Missouri State Specifications for Highway Construction for Type 1 mulch. Where slopes are 25 percent (4:1) or greater grade, Type 3 mulch ("hydromulch") meeting the requirements of Section 802 of the State specifications

Dates For Seeding

Permanent Seeding-March 1 to June 1 and August 15 to November 1

Temporary Seeding-Can occur during any season, however winter is the least tolerant.

Dormant Season Seeding-December 15 to February 29

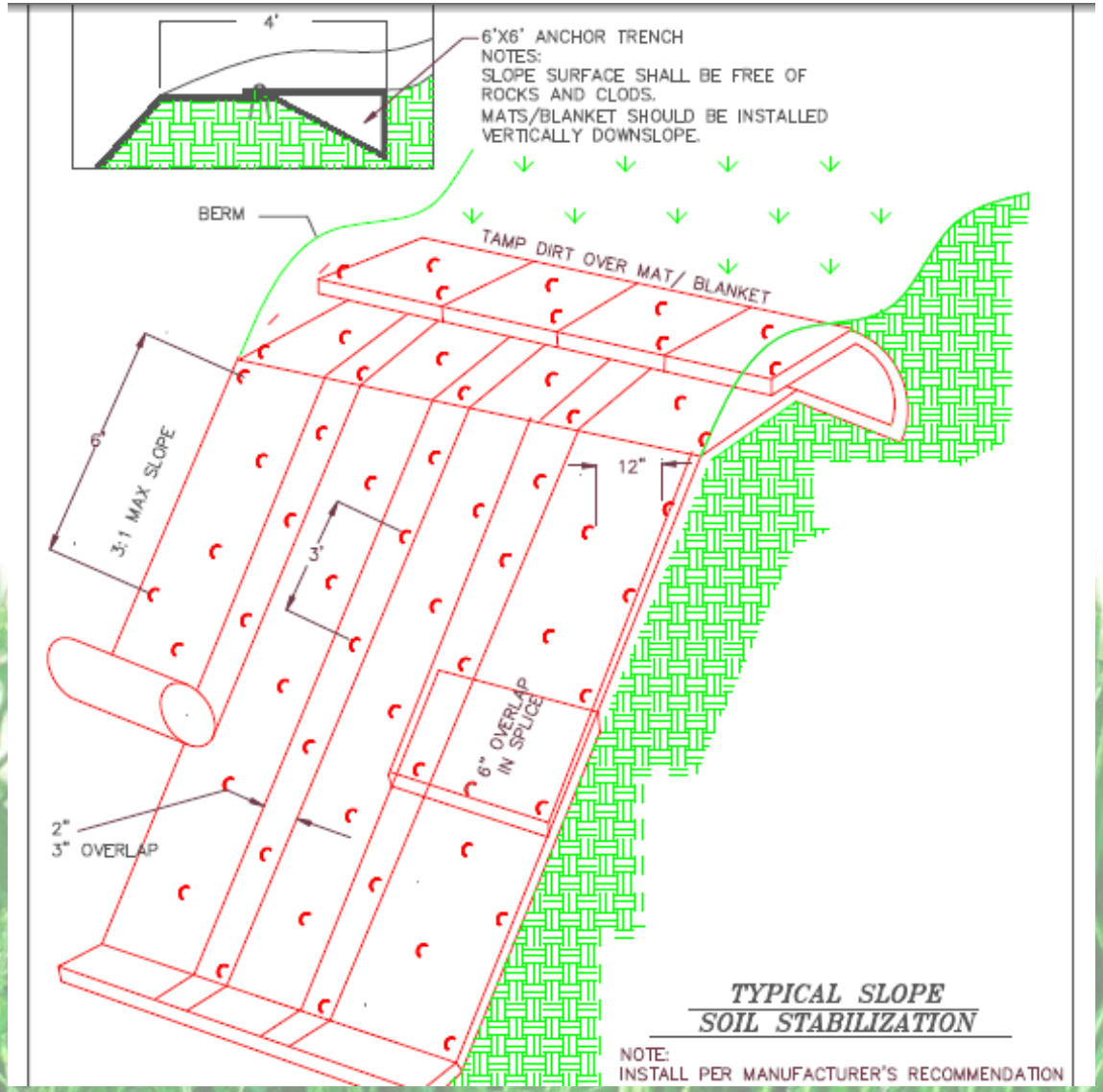
Mulch

Seed and Straw

Hydroseed

Sod

Erosion Control Blankets



- Can be used for temporary or permanent erosion control
- Installed after grading or installation of vegetation
- Need firm contact with soil
- Install perpendicular to flow
- To repair erosion: pull back the blanket, fill eroded area, revegetate and secure blanket
- Degrade naturally or remain in place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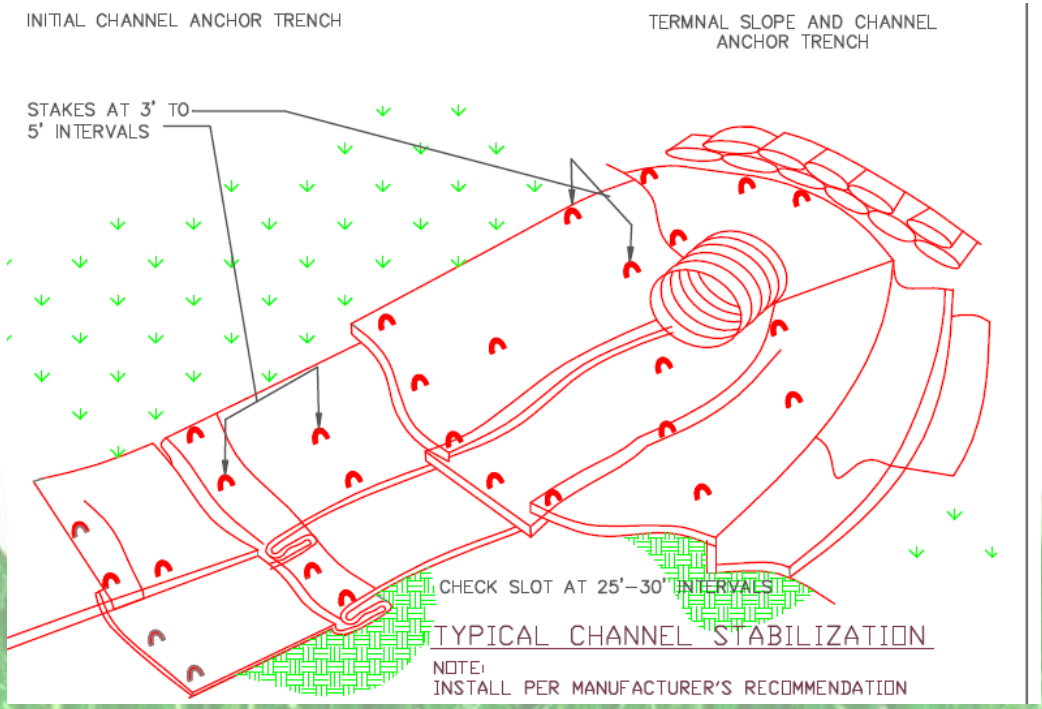
SUPPLY

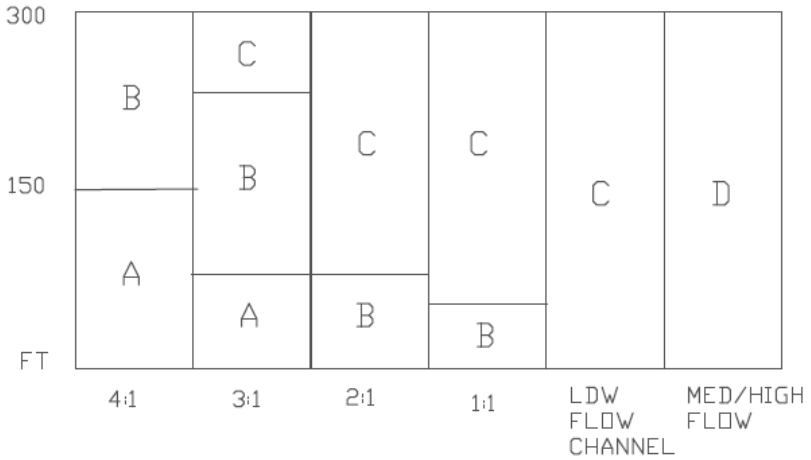
Turf Reinforcement Mats

- For permanent erosion control
- Ideal for steep slopes and channels with high water velocities
- Installed following grading or seeding
- Needs intimate contact with soil
- Repair erosion by pulling back the mat, filling the eroded area, revegetating, and securing the mat again
- Mats are typically left in place permanently

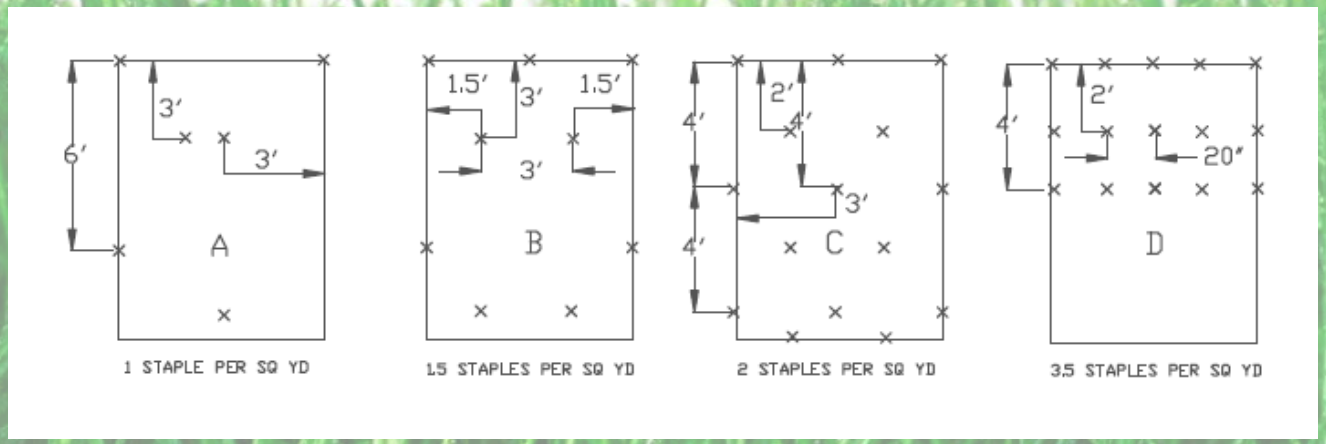


Determining Staple Pattern

LENGTH AND SLOPE TABLE



*MINIMUM STAPLE PATTERN GUIDE AND RECOMMENDATION FOR SLOPE AND CHANNEL APPLICATION



Streambank Stabilization

Streambank Stabilization

- May use willows, dogwoods, etc.
- Plant pointing downstream
- Cover 75-80% of the stake – these stakes are 4 foot long, so less than a foot should be exposed

Questions?

Thank you!